

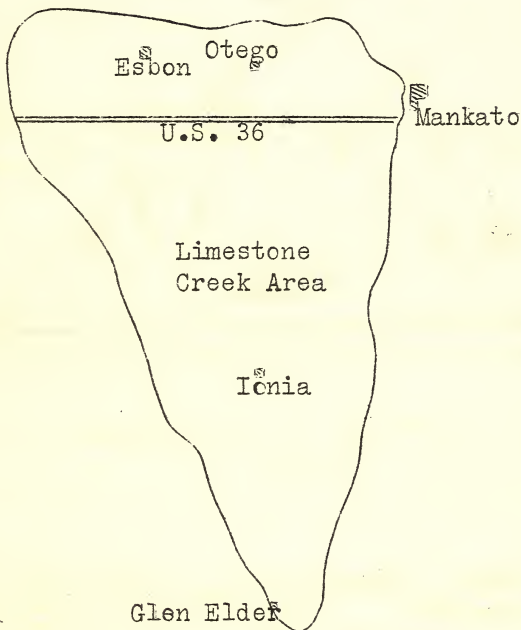
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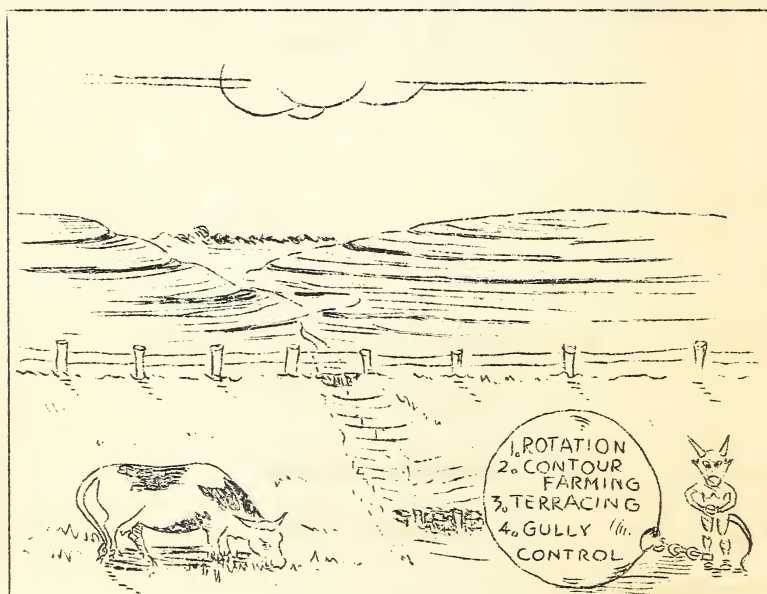
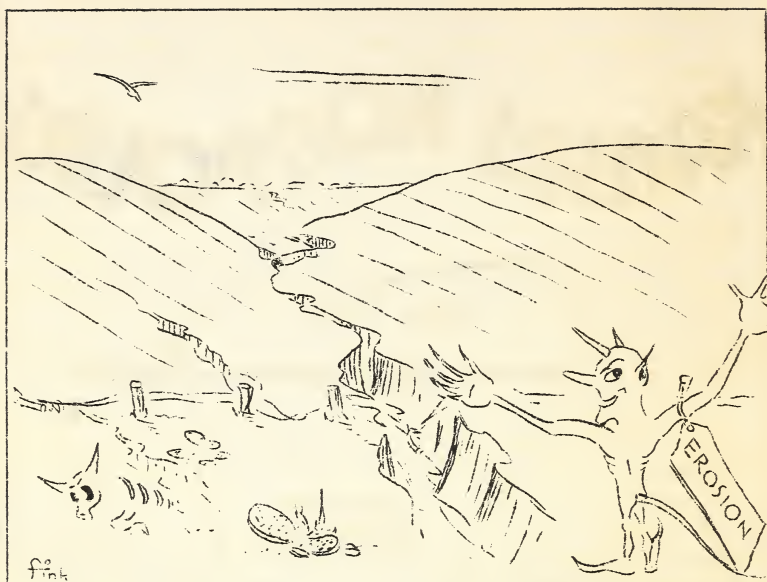
KANSAS KONTOURS



U.S. DEPARTMENT OF THE INTERIOR
SOIL EROSION SERVICE
PROJECT NO. 11

Mankato, Kansas

January, 1935



ENGINEERING APPLIED TO THE JOB OF FARMING

Agriculture staggered along bringing those, engaged in it for a livelihood, to a state of serfdom and dependents, until about 1800, when men began to use their heads as strenuously as their brawn to accomplish the job at hand.

From about 1800 to the present time, experimenters, inventors, or engineers have repeatedly lightened the farmer's load by placing machines, equipment, and ideas at his disposal, by means of which the American farm business has been able to hold a place of equality with other business enterprises.

The machines, referred to above, include the grain seeding and harvesting machinery, the multiple plow and cultivator units, the corn planter, etc.

Today the Soil Erosion Service is bringing other engineering practices into the job of farming. While agriculture has been enthusiastically employing engineering by way of machines to many farm jobs, there have been new and difficult problems develop. The outstanding difficulty encountered in American agriculture of the past century is the problem of soil washing. The job that is being tackled by the Soil Erosion Service, is to place in the hands of farmers, the machines, equipment, and ideas with which to combat this major difficulty.

There are few men who, if asked to list the equipment and machines they needed in their farm business, would think to mention a blade grader, a rotary scraper, an elevating grader or any of the rest of the machines used by the Soil Erosion Service to prepare agricultural lands so as to make them more farmable areas.

Ideas, sound practices, materials and equipment put into use at the direction of Agronomists and Engineers, are the weapons used to combat soil washing.

Sound practices:

1. Accept experimental information with regard to crop and livestock production. Experimental work is expensive, and cannot be handled profitably in any farm set-up. We don't try to raise cotton and tobacco in Jewell County, however, Agronomists have found that some strains and varieties of poorly adapted crops are grown on many of our farms. Talk your seed selections over with these men. You may get an idea from them that will mean cash in your pocket.

2. A crop plan that provides for soil improvement may readily overbalance any other effort on your part. Land in sod, small grain, or other cover crop will go a long way toward decreasing soil washing to a point where it cannot be considered serious while these crops occupy the land.

3. Contour cultivate the land. Do this whether the area is terraced or not. There is no particular reason why a field need be plowed or listed north and south just because the fence line runs that way.

Certainly, it is easier to contour farm a field after it has been terraced. The terraces are true guide lines for these "across the slope" operations. Contour cultivation also insures long life of the terrace system, because by so handling the land the regular activities of seed-bed preparation and crop cultivation, maintain the terraces.

4. Engineering ideas with regard to the use of equipment as well as the design of the machine itself will prove profitable in your farm business.

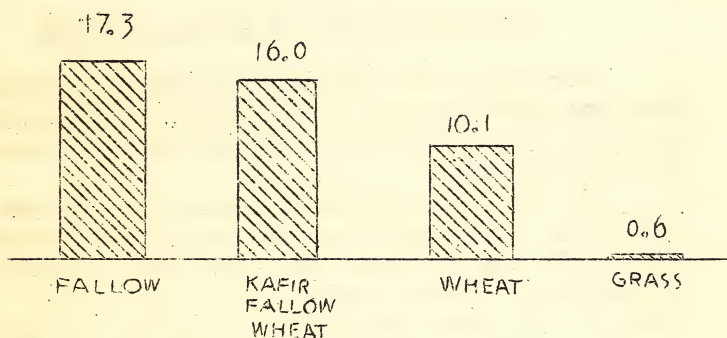
5. Controlled gullies may be made valuable drainage courses. Gully control can be accomplished by check dams, spillways, interception ditches, and by planting to grass, shrubs and trees.

Invite the Engineer to your farm. There are demonstrations of his activities all around you. Together, you may be able to put engineering in your farm business in a more profitable form.

CROPS REDUCE RUN-OFF

Three years work at the Hays Station have given additional proof of the value of crop cover in preventing run-off. The chart shown below will illustrate how effective grass is in retarding run-off. Many people seem to have the idea that grass land loses more water by run-off than does plowed land. The facts are that grass land loses very little water unless it is badly overgrazed, then it approaches bare ground conditions, which permit much loss of water.

PERCENT OF ANNUAL RAINFALL LOST AS RUN-OFF
Hays, Kansas 1930-1932.



These results indicate that one of the most effective methods of saving water is to have the land in a sod crop. Small grain like wheat permits only a little over half as much run-off as a row crop like kafir or corn. If we use crop rotations where small grain and sod crops are employed and the row crops are planted on the contour, we will greatly reduce run-off. This is a really effective place to start in a flood control program.

PRECIPITATION 1934

The precipitation in the Soil Erosion Area and vicinity for 1934 was the least that has been recorded by the U. S. Weather Bureau Station near Burr Oak for the past 34 years.

The records from this station have been used as the basis for calculating the normal rainfall and also as a basis for comparison with the stations maintained by the Soil Erosion Service.

The normal rainfall for the 34-year period, 1901 to 1934 inclusive, has been 24.42 inches as compared to 13.93 inches, which is the average of 23 Rain Gauge Stations scattered over the Soil Erosion Area, for 1934. This is 10.49 inches below the normal of 24.42 inches or 57% of normal.

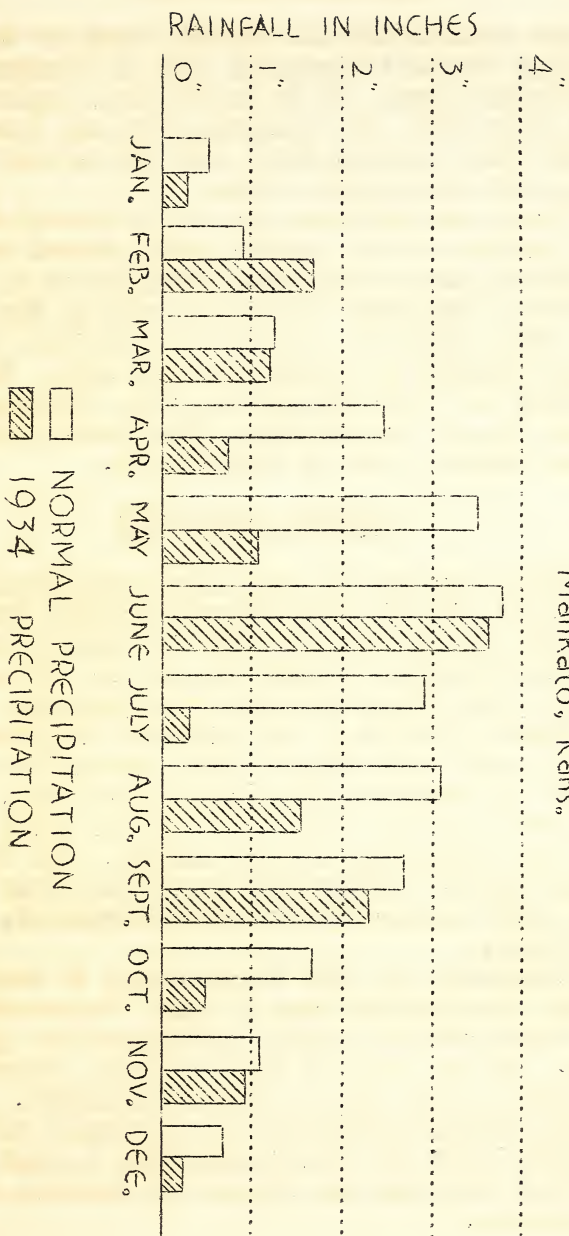
ALFALFA SEEDING IN SPRING OF 1935

Subsoils in the Kansas Soil Erosion Control Area are about as dry as they were last August, according to information secured from the construction crews.

The Staff of the Soil Erosion Service has repeatedly explained the necessity of a reserve supply of soil moisture for profitable alfalfa production. Unless a great deal of moisture falls in the next two or three months, spring seeding of alfalfa will not be advisable. The Soil Erosion Service will expect to carry the alfalfa seed over until next fall in case it is not possible to seed this spring. Summer fallowing and seeding in August will then be the recommendation.

However, if there is a possibility of seeding on a field this spring, it should be contour listed or cultivated as soon as possible in order to hold all the moisture that may fall this spring. Alfalfa stands are not difficult to obtain when soil and moisture conditions are favorable, but failure is to be expected if it is seeded under the wrong seedbed conditions.

PRECIPITATION CHART - 1934
 KANSAS SOIL EROSION SERVICE
 Mankato, Kans.



SPRING TREE PLANTING

The seedbed for all nursery stock or tree seedlings should be prepared well in advance of the planting crew. It is hoped that, beginning about March 15th, the planting crew may spend all its time planting trees and not be held up by any soil preparation work.

Trees and shrubbery are to be planted to check erosion and to reclaim badly eroded soil in gullies and on hillsides. When it is at all practical, the trees will be planted on the contour, thus making it possible to cultivate them without causing the eroding of the soil. The shrubbery is to be planted in gully ditches, beneath fences or near them, thus giving gully control without loss of farmed land.

SIGNING AGREEMENTS

Those farmers who have signed Cooperative Agreements with the Soil Erosion Service the last few weeks or any who may sign the next few months may find themselves unable to get all of the work done on their farms that has been planned.

Funds allotted to Soil Erosion Projects can only be used until July 1, 1935 unless the present session of Congress makes other provisions. There is a great deal of work to be done on farms that have been signed for several months. The Soil Erosion Service thinks that it is only fair to these early cooperators to plan to complete their work first.

Therefore, it will be necessary in some cases for the construction crew to pass, temporarily, some farms recently signed on Cooperative Agreements. In case this is done, we will attempt to get back to your farm as soon as possible.

If weather conditions are favorable for construction work, it will be possible to work all the farms that are now signed and probably some in addition.

PONDS

Continued drought in the Limestone Erosion Control Area has emphasized the need of ponds to furnish stock water. There are already a large number of ponds in the Area, probably an average of one to the farm. The unfortunate part of nearly all previous pond construction work is that practically no provision was made for overflow or spillway outlets. As a result of this, many of the small pond levees developed breaks. In most cases the entire absence of any silt catching device above the water level contour has allowed them to fill with sediment and reduced their capacity until they are now only wet weather ponds. Shallow ponds are of little value during the season of the year when well water is most limited because evaporation during the summer months may be three or four feet.

The Soil Erosion Service has constructed to date twenty-one ponds with an average capacity of 7.3 acre feet of water, having an average drainage area of 170 acres, a surface area of 1.97 acres, a maximum depth of eight feet and an average of 1,490 cubic yards of earth in the dam.

These ponds are being constructed in compliance with the specifications of the Water Resources Division of the State Board of Agriculture so that landowners may receive the tax reduction provided by Kansas Law on farms having large ponds. The plan, thus far, for pond construction by the Soil Erosion Service has been for the Cooperator to furnish the power and the Government furnish the labor, engineering plans and supervision.

HOLE DIGGING CULTIVATOR

Considerable interest has been aroused by the use that was made by the Soil Erosion Service of the Hole Digging Cultivator in December. This work was purely experimental.

It is a machine designed as a moisture conservation tool on summer fallow land. It digs alternate holes approximately five inches deep, 18 to 22 inches long and 10 to 15 inches wide. After being worked the field has somewhat the appearance of a huge waffle and this machine is sometimes called a waffle cultivator. Each hole will catch and hold considerable rain or snow. The operation should retard snow and dust from blowing off the field.

This machine was used experimentally on the contour, down the slope, and on slopes of varying degrees. About 78 acres were worked on the L. N. Iverson, John Phillips, E. F. Stites, Ben Finch, and Emit Henningsen farms.

"KANSAS KONTOURS"

Why should I farm around the hill? Is the Soil Erosion Service coming to us with just another theory to spoil our nice square fields and beautiful straight corn rows?

We have always tried to do business on the square, now they tell us, "Do your farming on the level."

Grandfather used to say, "More corn grows in crooked rows than straight ones." Here comes the theory that "More corn will grow in rows around the hill than rows over the hill, they call them CONTOURS."

It seems our straight rows and square fields are loosing "ground," they call it EROSION.

Our deed to the land won't hold the soil, but contour farming between these ridges, 30 feet wide and 2 feet high will help a great deal. They call these eave troughs TERRACES. A beautiful "permanent wave" it is.

Our Kansas zepthers fill the fence rows with soil, they call this WIND EROSION. Well, it would take a whirl wind to blow much soil out of these rattle snake curves.

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